Patent claims

1. Energy meter device comprising

- an initial input (1) to feed a signal that is derived from one voltage (V), which is connected to an initial analog/digital transformer (3), which comprises an output,
- a second input (2) to feed a signal that is derived from one current (I), whereto a second analog/digital transformer (4) is attached, which comprises an output,
- a multiplier (7), which links the outputs of both analog/digital transformers (3,4) with one another,
- a phase evaluation block (9) with two inputs, which are coupled to the outputs of both analog/digital transformers (3,4), and with one output that is linked with a control input of a phase correction block (6), and
- the phase correction block (6), which is coupled to an output of one of both analog/digital transformers (4), designed to correct a phase deviation ($\Delta\Phi$) of the digitized signal that is derived from a current (I) or a voltage (V).

2. Energy meter device according to claim 1,

characterized by the fact that

phase evaluation block (9) comprises a control block (12) to trigger phase correction block (6) depending on the phase deviation ($\Delta\Phi$).

3. Energy meter device according to claim 2,

characterized by the fact that

control block (12) contains means for the permanent storage of a phase correction value (18).

4. Energy meter device according to claim 2 or 3,

characterized by the fact that

phase evaluation block (9) comprises a phase difference detector (11) with two inputs, which are coupled to the outputs of both analog/digital transformers (3,4), and with an output that is connected with control block (12).

5. Energy meter device according to claim 4,

characterized by the fact that

phase evaluation block (9) comprises a phase layer detector (10), which is coupled between the outputs of both analog/digital transformers (3,4) and inputs of phase difference detector (11).

6. Energy meter device according to claim 5,

characterized by the fact that

phase layer detector (10) is designed to establish signal peak values.

7. Energy meter device according to claim 5,

characterized by the fact that

phase layer detector (10) is designed to establish signal zero points.

8. Energy meter device according to one of the claims 1 to 7,

characterized by the fact that

the first and second analog/digital transformer (3,4) are each constructed as sigma-delta transformers.

9. Energy meter device according to one of the claims 1 to 8,

characterized by the fact that

an integrator (8) is provided, which is operated subsequent to multiplier (7).

10. Energy meter device according to one of the claims 1 to 9,

characterized by the fact that

the first and second analog/digital transformer (3,4), phase correction block (6) and phase evaluation block (9) are designed in integrated circuitry.

11. Energy meter device according to one of the claims 1 to 10,

characterized by the fact that

a non-galvanic coupling transmitter (16) is connected to the first input (1) and/or the second input (2) to switch on the signal that is derived from a voltage (V) and/or from a current (I).

12. Energy meter device according to claim 11,

characterized by the fact that

the non-galvanic coupling transmitter (16) is designed as transformer.

13. Energy meter device according to one of the claims 1 to 12,

characterized by the fact that

a means is provided to generate a test signal (17), which is coupled with the first and second input (1,2) of the energy meter device in order to feed in the test signal in a calibration mode.

14. Energy meter device according to one of the claims 1 to 12,

characterized by the fact that

phase correction block (6) comprises an initial digital filter, and that a second digital filter (5) is applied between the output of the first analog/digital transformer (3) and multiplier (7).

15. Energy meter device according to claim 14,

characterized by the fact that

a means is provided for scanning rate control (19), which is coupled with each control

input of phase correction block (6) and the second digital filter (5).

16. Method for the calibration of an energy meter device with the following steps:

- coupling a test signal to two inputs (1,2) of an energy meter device,
- digitizing of the test signal that is positioned at both inputs (1,2),
- establishing a phase deviation between both digitized test signals ($\Delta\Phi$),
- generating a phase correction signal and charging of one of both digitized test signals with the phase correction signal.

17. Method according to claim 16,

characterized by the

establishment of the phase layers of both digitized test signals through the measurement of the signal peak values of the digitized test signals in order to establish the phase deviation ($\Delta\Phi$).

18. Method according to claim 16,

characterized by the

establishment of the phase layer of both digitized test signals through the measurement of the signal zero points of the digitized test signals in order to establish the phase deviation

(ΔΦ).

19. Method according to one of the claims 16 to 18,

characterized by

each digital filtering of both digitized test signals prior to the establishment of the phase deviation (ΔΦ).

20. Method according to claim 19,

characterized by

the setting of the scanning rate of the digital filtering of both digitized test signals prior to the establishment of the phase deviation (ΔΦ).

21. Method according to one of the claims 16 to 20,

characterized by

the inductive coupling of the test signal at least at one input (2) of the energy meter device.